SOLID PHASE MICROEXTRACTION HELPING THE FOOD QUALITY AND HEALTH

Sílvia M. Rocha

Departamento de Química, Universidade de Aveiro, 3810-193 Aveiro

Solid phase microextraction (SPME) is used as a simple, high efficient and reliable sample preparation technique for the analysis of a variety of organic compounds [1]. In SPME, a thin layer of a coating fibre that is coated on the outside of a fused silica rod is used for extract analytes. The small volume of the extraction phase allows for the combination of sampling, sample preparation, and sample introduction in an equipment into one step. SPME has been commercially available since 1993 and now is available with various sorbent materials and various coating thicknesses. The coating fibres based on absorption and adsorption processes have been the most used. However, mixed coating fibre was also used for a wide range of analytes, which was reported as been most sensitive due to its increase retention capacity resultant from the mutually potentiating effect of adsorption and absorption to the stationary phase [2].

SPME provides many advantages over conventional sample preparation techniques. The SPME method is simple to use, is not a time consuming technique, is less expensive, does not require solvent extraction, can be used to extract analytes from gaseous, liquid and solid matrices, and allows characterisation of the headspace in contact with the sample. This technique is also highly versatile as it allows the study of volatile and semi-volatile analytes, and also the non-volatile compounds, by performing the derivatization SPME.

SPME first application was the evaluation of pollutants in water [3]. Since then, SPME has been used in a range of fields including studies of food products and more recently to detect metabolites associated to diseases in humans. In what concerns the food applications, the study of the wine polymeric material and volatile components interactions, the determination of methylesterification and acetylation of polysaccharides, the coffee brews characterization, the cork characterization and detection of off-flavours, the fruits (apples, grapes, plums) characterization, the musts and wine characterization, and the establishment of markers for salt will be discussed. Furthermore, the present communication will be focus on the breath analysis. General metabolic conditions and developing diseases in humans beings can very often be traced by evaluating chemical markers in exhaled air. This is principally due to an almost instantaneous equilibrium between the pulmonary blood and the air in the alveoli of the lung [4]. This methodology was applied to the diagnostic of the lung cancer, mammary cancer, diagnosis of the *Helicobacter pylori* infection, etc.

References

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